

**Remarks**

The Office Action mailed March 16, 2010 has been received and reviewed. Claims 15, 16, 21, 28, and 29 having been amended, and no claims having been canceled or added herein, the pending claims are claims 15-33.

Independent claims 15 and 21 have been amended to recite the proviso that component Z1 does not include polydimethylsiloxanes. Applicants respectfully submit that the amendment to exclude polydimethylsiloxanes is adequately supported by the specification to satisfy the written description requirements of 35 U.S.C. §112, first paragraph. For example, the exclusion of polydimethylsiloxanes is supported by the positive recitation in the present specification of alternatives in which component Z1 can include polydimethylsiloxanes (e.g., claim 16). ***See, for example, M.P.E.P. §2173.05(i), which states that "[i]f alternative elements are positively recited in the specification, they may be explicitly excluded in the claims."***

Dependent claim 16 has been amended to delete polydimethylsiloxanes from the Markush group.

Independent claim 28 and 29 have been amended to incorporate a portion of the Markush group recited in dependent claim 16 (as amended).

Reconsideration and withdrawal of the rejections are respectfully requested.

**Provisional Objection to the Claims under 37 C.F.R. §1.75**

The Examiner advised that should claim 15 be found allowable, claim 28 would be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof. The Examiner also advised that should claim 21 be found allowable, claim 29 will be objected to under 37 C.F.R. §1.75 as being a substantial duplicate thereof. Applicants respectfully traverse the provisional objections.

Applicants respectfully submit that neither claims 15 and 28 nor claims 21 and 29 are substantial duplicates for at least the reasons previously presented in the Amendment and Response submitted November 6, 2009.

However, claims 15, 21, 28, and 29 having been amended, Applicants respectfully submit that the provisional objection has been obviated.

Reconsideration and withdrawal of the objection to the claims are respectfully requested.

### **Rejection under 35 U.S.C. §102(b)**

The Examiner rejected claims 15-33 under 35 U.S.C. §102(b) as being anticipated by Nowak et al. (WO 01/92374 A1), using U.S. Patent No. 6,867,246 as the English translation for examination purposes. Applicants respectfully traverse the rejection of claims 15-33 (as amended).

Nowak et al. does not disclose a specific composition that includes (a) at least one polyaddition product or at least one polycondensation product having on average 2 aziridino groups or more and a molecular weight of at least 1000 (e.g., component Z1), and (b) at least one compound having only 1 aziridino group (e.g., component Z2).

For at least this reason, Applicants respectfully submit that claims 15-33 are not anticipated by Nowak et al. Further, Applicants respectfully submit that one of skill in the art would lack the necessary motivation to modify Nowak et al. for reasons similar to those discussed in the Amendment and Response submitted November 6, 2009, which are incorporated herein by reference. For at least this reason, Applicants respectfully submit that the Examiner has failed to establish, for claims 15-33, a *prima facie* case of anticipation or obviousness over Nowak et al.

Nonetheless, the Examiner made the allegation that "Nowak *et al.* teaches a specific composition {Table 1, B3} comprising 54.3 wt% of N-alkylaziridine block copolymer of synthesis example 6 (15:38-16:5) {corresponding to Z1} and 6.2 wt% of a mixture of ***monoaziridino*** polyethers prepared from a polyether diol which consists of ethylene oxide and tetrahydrofuran units in the molar ratio of 1:3:5 {corresponding to Z2}" (page 3, lines 6-10 of the Office Action mailed March 16, 2010; emphasis added). Applicants earnestly disagree.

In fact, B3 in Table 1 of Nowak et al. discloses 6.2 % by weight of a mixture of *bisaziridino*-polyethers, not a mixture of *monoaziridino* polyethers as improperly alleged by the Examiner.

Further, while the Examiner may have urged that a mixture of monoaziridino polyethers be substituted for the disclosed mixture of bisaziridino polyethers, Nowak et al. fail to teach or suggest such a substitution, and the Examiner has failed to supply a convincing line of reasoning as to why one of skill in the art would be motivated to make such a substitution.

Moreover, unexpected results were obtained using a mixture of monoaziridino polyethers. For example, the present specification explains that "[t]he problem of the present invention was accordingly to make available dental materials based on aziridino polymers which are distinguished by *accelerated curing* whilst still having an *adequate processing time* (open time). A further problem of the invention was, especially, to make available dental materials based on aziridino polymers which, in comparison to the dental materials known from the prior art, *reach high values of Shore A hardness more quickly*, whilst the completely cured materials have Shore A hardnesses which are located within a desired range and are substantially the same as in the case of the dental materials known from the prior art." (Page 2, line 30 to page 3, line 7 of the present specification; emphasis added).

Further, Applicants could find no suggestion in Nowak et al. for solving this problem (e.g., to achieve accelerated curing) by using a combination of aziridino compounds (component Z1 and component Z2). Moreover, Applicants respectfully submit that the Examiner has not presented a convincing line of reasoning as to why one of skill in the art would have viewed using a combination of aziridino compounds (component Z1 and component Z2) as a *predictable solution* to achieve accelerated curing. Although the exact mechanism of the hardening reaction is unknown, Applicants respectfully submit that one of skill in the art would not reasonably predict that adding component Z2, which includes a monofunctional compound (i.e., having fewer reactive groups per molecule than difunctional or higher functionality components) to component Z1, which includes an at least difunctional component, would lead to accelerated curing.

Surprisingly, the Examples of the present specification show that when adding even small amounts of component Z2, the Shore A hardness (measured after 10 minutes) is generally higher, while the final Shore A hardness (measured after 24 hours) remains substantially the same. *See, for example*, Tables 1, 2, 4, 5, 6, and 7 on pages 29-33 of the present specification. Thus, by using component Z2, the setting reaction can be accelerated without negatively affecting the desired final properties.

For at least these reasons, Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of unpatentability for claims 15-33 being anticipated by, or rendered obvious over Nowak et al.

Further, in an effort to advance prosecution of the present application, independent claims 15, 21, 28, and 29 have been amended to provide even further distinction between the presently claimed subject matter and the cited art (i.e., Nowak et al.), as further discussed herein below.

Claims 15-27 and 30-31

Independent claims 15 and 21 (as amended) respectively recite a composition and a process for the preparation of a composition, that include, among other things, component Z1 that includes at least one polyaddition product or at least one polycondensation product having on average two aziridino groups or more and a molecular weight of at least 1000, with the proviso that component Z1 does not include polydimethylsiloxanes.

In contrast, Nowak et al. disclose silicone-containing N-alkylaziridine block copolymers and materials including silicone-containing N-alkylaziridine block copolymers. For example, Nowak et al. state:

The invention relates to N-alkylaziridine block copolymers and the use thereof, in particular in dental preparations.

In the context of this invention, N-alkylaziridine block copolymers are understood as meaning oily or resin-like polymers which have **a silicone core block** which is linked to a plurality of polyether blocks, to the respective other end of which in turn aziridino groups are linked.

(Column 1, lines 4-10 of Nowak et al.).

For at least this reason, Applicants respectfully submit that presently pending claims 15-27 and 30-31 are neither anticipated by, nor rendered obvious over Nowak et al.

Applicants note that the Examiner asserted that "Nowak *et al.* teaches N-alkylaziridino having a polyether structure ***without silicone blocks*** and with at least one N-alkylaziridino group and preferably two N-alkylaziridino groups (10:29-45)" (page 3, lines 4-6 of the Office Action mailed March 16, 2010; emphasis added). To any extent that the Examiner is implying that Nowak et al. disclose materials that do not include silicone blocks, Applicants earnestly disagree.

The portion of Nowak et al. pointed to by the Examiner has been reproduced herein below in the proper context of the application:

Constituent (A) contains the N-alkylaziridine block copolymers according to the invention. ***The use of mixtures of N-alkylaziridine block copolymers*** having different molar masses and aziridino equivalent masses is possible and is ***used for adjusting the properties of the materials.***

To establish the desired mechanical properties of the cured materials, the preparations according to the invention may contain ***compounds having a polyether structure without silicone blocks*** and with at least one N-alkylaziridino group and preferably two N-alkylaziridino groups.

These ***additionally usable*** N-alkylaziridinopolyethers may have aziridino equivalent masses of 250 to 10 000 g/equivalent, it being possible for the polyether parent structures to be homopolymers of ethylene oxide, propylene oxide or tetrahydrofuran, random co- and terpolymers of said monomers and/or block copolymers of ethylene oxide and propylene oxide.  
(Column 10, lines 29-45 of Nowak et al.; emphasis added)

Applicants respectfully submit that it would be clear to one of skill in the art, particularly in view of the teachings of Nowak et al. as a whole, that the reference to ***compounds having a polyether***

*structure without silicone blocks* refers to compounds that can optionally be used *in addition to* (i.e., in combination with) the N-alkylaziridine block copolymers of the invention having a silicone core block.

Claims 28-29 and 32-33

Independent claims 28 and 29 (as amended) respectively recite a composition and a process for the preparation of a composition, that include, among other things, component Z1 that includes at least one polyaddition product or at least one polycondensation product selected from the group consisting of polyethers, polyesters, and polyurethanes, and having on average 2 aziridino groups or more and a molecular weight of at least 1000. Notably, the at least one polyaddition product and the at least one polycondensation product are not selected from polydimethylsiloxanes.

Applicants respectfully submit that claims 28-29 and 32-33 are neither anticipated by, nor rendered obvious over Nowak et al., for reasons similar to those discussed herein above for the patentability of claims 1-27 and 30-31 over Nowak et al.

Reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) are respectfully requested.

**Amendment and Response**

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For: PREPARATIONS BASED ON AZIRIDINO POLYETHERS AND THE USE THEREOF

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**Summary**

It is respectfully submitted that all the pending claims are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives at the telephone number listed below if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted

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**CERTIFICATE UNDER 37 CFR §1.8:**

The undersigned hereby certifies that this paper is being transmitted via the U.S. Patent and Trademark Office electronic filing system in accordance with 37 CFR §1.6(a)(4) to the Patent and Trademark Office addressed to the Commissioner for Patents, Mail Stop **Amendment**, P.O. Box 1450, Alexandria, VA 22313-1450, on this 16<sup>th</sup> day of June, 2010.

By: 

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